

## CHAPTER 4 STEAM ENGINEERS

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### 400 REQUIREMENTS FOR LICENSED OPERATORS

400.1 The operation and maintenance of the following equipment shall be exempt from the requirement of having licensed operating engineers:

- (a) Vehicles operated under the regulations of the D.C. Public Service Commission or the U.S. Interstate Commerce Commission;
- (b) Machinery on boats or vessels operated under the regulations of the United States Coast Guard;
- (c) Automotive vehicles used solely for traction purposes;
- (d) Packaged, self-contained air conditioning units;
- (e) Automatically operated air conditioning systems with non-toxic and non-inflammable refrigerant and not over a total of one hundred twenty-five (125) compressor horsepower, where no one refrigerant circuit is in excess of seventy-five (75) horsepower;
- (f) Automatically operated air conditioning systems using the heat absorption cycle with a non-toxic and non-inflammable refrigerant and not over a total of one hundred twenty-five (125) tons of refrigeration, where no one refrigerant circuit is in excess of seventy-five (75) tons, except where a boiler of a type and capacity that requires a licensed engineer is used;
- (g) Cold storage and refrigeration systems using non-toxic and non-inflammable refrigerant not in excess of seventy-five (75) compressor horsepower;
- (h) Cold storage and refrigeration systems using the heat absorption cycle with a non-toxic and non-inflammable refrigerant not in excess of forty (40) tons;

- (i) Cold storage and refrigeration systems using toxic or inflammable refrigerant not in excess of five (5) compressor horsepower;
- (j) Cold storage and refrigeration systems using the heat absorption cycle with a toxic or inflammable refrigerant not in excess of three (3) tons;
- (k) Automatically operated pumping stations;
- (l) Hot water heating boilers where the total boiler horsepower is not in excess of seventy-five (75) horsepower [sixteen thousand eight hundred square feet (16,800 ft.<sup>2</sup>) of water radiation at one hundred fifty degrees Fahrenheit (150° F.)];
- (m) Air compressors having a capacity of less than one hundred ten cubic feet per minute (110 ft.<sup>3</sup>/min.) at one hundred pounds per square inch (100 lbs./in.<sup>2</sup>) pressure;
- (n) Motor or engine driven electric generator sets used for welding or lighting not in excess of fifty kilovolt amperes (50 KVA); or
- (o) Low pressure steam boilers having gravity or trap returns.

## 400.2

The operation and maintenance of the following equipment shall be by or under the daily supervision of a steam or other operating engineer who is duly licensed in the proper class by the Board of Examiners for Steam and Other Operating Engineers in the District of Columbia:

- (a) Boilers and boiler auxiliaries;
- (b) Steam engines;
- (c) Refrigeration equipment with non-toxic and non-inflammable refrigerant driven by electric motors in excess of twenty-five (25) horsepower;
- (d) Refrigeration systems using the heat absorption cycle with non-toxic and non-inflammable refrigerant;
- (e) Refrigeration systems of five (5) or more compressor horsepower using a toxic or inflammable refrigerant;
- (f) Refrigeration systems of three (3) or more tons using the heat absorption cycle with a toxic or inflammable refrigerant;
- (g) Internal combustion engines in excess of twenty-five (25) horsepower; and
- (h) Air compressors driven by electric motors or internal combustion engines.

**AUTHORITY:** Unless otherwise noted, the authority for this chapter is An Act to regulate steam-engineering in the District of Columbia, approved February 28, 1887, 24 Stat. 427, ch. 272. Sec. 2.

**SOURCE:** §§1.1 and 1.2 of Commissioners' Order No. 301, 945, 5M DCRR §§1.1 and 1.2.



**401 DUTIES OF LICENSED OPERATORS**

- 401.1 The licensed operating engineer shall be responsible for the safe operation and maintenance of all equipment in his or her charge.
- 401.2 The operating engineer licensed under this chapter shall personally inspect all equipment in his or her charge at least once every twenty-four (24) hours when the equipment is in continuous operation.
- 401.3 When the equipment is in operation for a period or periods of less than twenty-four (24) hours duration, the licensed operating engineer shall personally inspect the equipment at least once during each period of operation.
- 401.4 The continuous presence at all times of a steam or other operating engineer duly licensed in the proper class by the Board of Examiners for Steam and Other Operating Engineers in the District of Columbia shall be required for the operation, maintenance, or supervision of the operation or maintenance of high-pressure steam boilers as defined in this chapter.
- 401.5 If the engineer-in-charge is on the premises and within call, he or she shall be deemed to be in continuous presence for the purpose of this section.

**SOURCE:** §1.1 of Commissioners' Order No. 301, 945, 5M DCRR §§1.1.

**402 BOARD OF EXAMINERS OF STEAM AND OTHER OPERATING ENGINEERS**

- 402.1 The Board of Examiners (appointed by the Mayor in accordance with the provisions of D.C. Code §2-2402 (1981)) shall meet not less than thirty (30) times per year for the examination of applicants for steam and other operating engineer licenses and for the transaction of other business which may be necessary in connection with their office.
- 402.2 The examination for steam and other operating engineer licenses shall include questions, diagrams, and practical tests of sufficient scope to thoroughly demonstrate to the Board that the applicant has the necessary experience; knowledge of the basic principles involved in the safe operation, care, and maintenance of the applicable equipment; and is qualified to take complete charge of and safely operate the engine or steam or hot water boiler or machinery of the class for which an application for a license has been made.
- 402.3 An applicant for a license for portable and construction equipment operator shall not be required to be examined unless the Board is in doubt about the applicant's ability as expressed by his or her statement of experience and endorsers.

**SOURCE:** §§2.1 and 2.2 of Commissioners' Order No. 301, 945, 5M DCRR §§2.1 and 2.2.

**403 CLASSES OF LICENSES**

- 403.1 The following classes of licenses shall be offered:
- (a) Class 1 - Steam Engineer;

- (b) Class 2 - Steam Engineer;
- (c) Class 3 - Steam and Hot Water Heating Boiler Engineer;
- (d) Class 4 - Steam Engineer;
- (e) Class 5a - Steam Engineer;
- (f) Class 5b - Miniature Boiler Engineer;
- (g) Class 6 - Steam and Hot Water Heating Boiler Engineer;
- (h) Class 7 - Portable and Construction Equipment Operator;
- (i) Class 8a - Operating Engineer - Refrigeration; and
- (j) Class 8b - Operating Engineer - Stationary Internal Combustion.

403.2 The total horsepower rating of all boilers and machinery installed and connected in a building or plant, except in the case of Class 3 Engineers as provided in §404.4, shall be the basis of determining the grade of license required. Machinery specifically exempted in §400.1, fractional horsepower motors, and electric motors used as prime movers of machinery not covered by this chapter shall not be included.

**SOURCE:** §§3.1, 3.2, 3.3, and 3.12 of Commissioners' Order No. 301, 945, 5M DCRR §§3.1, 3.2, 3.3, and 3.12.

#### **404 LICENSE REQUIREMENTS**

404.1 To qualify for a license under this chapter, the applicant shall be required to meet the qualifications set forth in this section for each class of license.

404.2 An applicant for a **Class 1 - Steam Engineer** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate any plant; and
- (b) Two (2) years of experience in addition to the experience required for the Class 3 license (§404.4), one of which shall be as an engineer in a 2nd class plant, or as a Class 2 Steam Engineer and assistant engineer in a 1st Class plant while holding a 2nd Class License.

404.3 An applicant for a **Class 2 - Steam Engineer** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate a high pressure steam plant where total horsepower of the boilers and engines or refrigeration machinery is not in excess of seven hundred fifty (750) horsepower; and
- (b) In addition to the experience required for examination for the Class 3 Steam Engineer license, one (1) year of experience as an assistant engineer in charge of a 3rd Class plant.



404.4 An applicant for a **Class 3 - Steam and Hot Water Heating Boiler Engineer** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate any of the following:
  - (1) A plant having high pressure steam boilers not to exceed four hundred (400) horsepower or a combination of high pressure boilers and heating boilers or refrigeration equipment, not to exceed a total of four hundred (400) horsepower;
  - (2) A heating plant having low pressure steam boilers with a pump return and refrigeration equipment, with no limitation on total capacity; or
  - (3) A heating plant having hot water boilers and refrigeration equipment, with no limitation on total capacity.
- (b) At least two (2) years of experience in a high pressure steam plant of more than seventy-five (75) boiler horsepower as an assistant engineer, fireman, or oiler; or four (4) years of experience in a plant of not less than fifty horsepower (50) [Seven thousand square feet (7,000 ft.<sup>2</sup>) of steam radiation or eleven thousand two hundred square feet (11,200 ft.<sup>2</sup>) of water radiation at one hundred fifty degrees Fahrenheit (150° F.)], One year of experience will be waived for a graduate mechanical engineer from a duly recognized school of technology or a graduate of an approved engineer apprentice training program.

404.5 An applicant for a **Class 4 - Steam Engineer** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate high pressure stationary steam boilers not in excess of seventy-five (75) horsepower and steam pressure not in excess of one hundred twenty-five pounds per square inch (125 lbs./in.<sup>2</sup>); and
- (b) At least six (6) months of experience in the care and operation of steam boilers.

404.6 An applicant for a **Class 5a - Steam Engineer** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate high pressure stationary steam boilers not in excess of twenty-five (25) horsepower and steam pressure not in excess of one hundred twenty-five pounds per square inch (125 lbs./in.<sup>2</sup>); and
- (b) At least six (6) months of experience in the care and operation of steam boilers.

404.7 An applicant for a **Class 5b - Miniature Boiler Engineer** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate a boiler which does not exceed the following limits: sixteen inch (16") diameter of shell, forty-

two inches (42") of shell, twenty square feet (20 ft.<sup>2</sup>) of heating surface, and one hundred pounds per square inch (100 lbs./in.<sup>2</sup>) allowable working pressure; and

- (b) At least six (6) months of experience in the care and operation of steam boilers.

404.8 An applicant for a **Class 6 - Steam and Hot Water Heating Boiler Engineer** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate steam and hot water heating boilers, where the steam pressure does not exceed fifteen pounds per square inch (15 lbs./in.<sup>2</sup>) and the steam or hot water heating boilers do not exceed two hundred (200) horsepower (twenty eight thousand square feet (28,000 sq. ft.<sup>2</sup>)) of steam radiation or forty-four thousand eight hundred square feet (44,800 sq. ft.<sup>2</sup>) of water radiation at one hundred fifty degrees (150° F.); and
- (b) At least one (1) year of experience as a fireman or operator of a boiler other than a miniature boiler.

404.9 An applicant for a **Class 7 - Portable and Construction Equipment Operator** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate portable and construction equipment and machinery where the prime mover is in excess of twenty-five (25) horsepower, or as otherwise designated in the following classifications:
- (1) Air compressors having a pressure capacity in excess of one hundred ten cubic feet per minute (110 ft.<sup>3</sup> /min.) at one hundred pounds per square inch (100 lbs./in.<sup>2</sup>), hoists, and similar related equipment: at least six (6) months of experience in the care and operation of the class of equipment for which the license is to be applied;
  - (2) Bulldozers, scrapers, rollers, graders, front-end loaders, trenching machines, and similar and related equipment: at least one (1) year of experience in the care and operation of the class of equipment for which the license is to be applied;
  - (3) Cranes, shovels, derricks, draglines, clam shells, pile drivers, and similar and related equipment: at least two (2) years of experience in the care and operation of the class of equipment for which the license is to be applied.

404.10 An applicant for a **Class 8a - Operating Engineer - Refrigeration** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate refrigeration systems where the total connected load is not in excess of two hundred (200) compressor horsepower, or two hundred (200) tons for an absorption system, and where there is no other equipment requiring a licensed steam or other operating engineer; and



- (b) At least one (1) year of experience in the care and operation of refrigeration equipment.

404.11 An applicant for a **Class 8b - Operating Engineer - Stationary Internal Combustion** license shall have the following qualifications:

- (a) The experience and knowledge to take charge of and operate stationary internal combustion engines where there is no other equipment requiring a licensed steam and other operating engineer; and
- (b) At least one (1) year of experience in the care and operation of internal combustion engines.

**SOURCE:** §§3.1 through 3.10 of Commissioners' Order No. 301, 945, 5M DCRR §§3.1 through 3.10.

#### **405 APPLICATION FOR LICENSE EXAMINATION**

405.1 Application for examination shall be made on a blank form furnished by the Board of Examiners.

405.2 The class of license applied for, together with a statement of the experience of the applicant in operating steam boilers and engines with machinery, must be given and sworn to before a Notary Public in the form of an affidavit.

405.3 Except as otherwise provided in this section, each application shall also include the endorsement of three (3) reputable citizens of the District of Columbia, regarding the character and moral habits of the applicant, one of whom shall be a licensed engineer of the District of Columbia.

405.4 If an applicant holds or has held an unrevoked license as an engineer in another jurisdiction, the requirement for an engineer's endorsement (§405.3) may be waived.

405.5 The application for **Class 7 - Portable and Construction Equipment Operator** license shall include three (3) endorsers, as follows:

- (a) A District of Columbia licensed operator who holds a license similar to that for which application is being made;
- (b) An employer, either past or present, for whom the applicant has worked in a capacity similar to the grade for which he is applying; and
- (c) An additional signature of either one of the groups identified in paragraphs (a) and (b) of this subsection.

405.6 Each endorser shall certify that the applicant is personally known to the endorser, and that the applicant has the necessary experience and qualifications to entitle the applicant to a license.

405.7 If the Board of Examiners has any doubt as to the qualifications of an applicant, the Board may investigate the applicant's experience and endorsements, or may require

a practical demonstration of the applicant's ability to perform the required duties of an operator. A competent operator may be asked to assist and advise the members of the Board if a practical demonstration is required.

- 405.8 Applications shall be filed in the office of the Board of Examiners by Thursday of the week of examination.
- 405.9 Each application shall be accompanied by two (2) unmounted full face photographs, 2-1/4" by 2-3/4" in size, taken not more than three (3) months prior to the date application is filed.
- 405.10 The license fee of three dollars (\$3) shall be paid to the D.C. Treasurer when the applicant procures his or her license.

**SOURCE:** §5.1 of Commissioners' Order No. 301, 945, 5M DCRR §5.1.

#### **406 CERTIFICATION OF APPLICANTS**

- 406.1 If the statement of experience as given on the application and the endorsements are satisfactory to the Board of Examiners, the applicant shall be granted a license in the grade for which he or she applies without further examination.
- 406.2 An applicant who successfully passes the required examination shall be certified by the Board of Examiners for a license in the class for which he or she was examined, or in a lower class if, in the opinion of the Board, the applicant lacks either experience or requisite knowledge in the class for which application was made.
- 406.3 An applicant who fails to pass the required examination for a Class 1, Class 2, or Class 3 license shall not be granted another examination until a period of six (6) months has elapsed.
- 406.4 An applicant who fails to pass the required examination for a Class 4, Class 5, Class 6, Class 7, or Class 8 license shall not be granted another examination until a period of three (3) months has elapsed.
- 406.5 Each applicant will be notified by letter as to whether or not he or she passed or failed the examination.

**SOURCE:** §§5.1 and 5.2 of Commissioners' Order No. 301, 945, 5M DCRR §§5.1 and 5.2.

#### **407 ISSUANCE AND DISPLAY OF LICENSES**

- 407.1 Licenses shall be issued for steam or other operating engineers in the classes listed.
- 407.2 Steam Engineer Licenses (Classes 1, 2, and 3) shall entitle the licensee to operate in any lower class except Class 7.
- 407.3 Operating engineer licenses shall restrict the licensee to operate in the class stated on the license.
- 407.4 When a license has been lost or otherwise misplaced, the owner shall present a statement properly notarized to that effect and pay a fee of five dollars (\$5) for the issuance of a duplicate license.



- 407.5 Each license shall bear a photograph and the name and signature of the person to whom it is issued.
- 407.6 Each license shall be displayed in a glass frame in a prominent place in the plant where the licensee is employed; except in the case of Hoisting and Portable Operating Engineers, who are issued card-size licenses which must be carried on the person of the licensee.
- 407.7 All licenses shall be subject to examination by any police officer or official of the District government at all times.

**SOURCE:** §6.1 of Commissioners' Order No. 301, 945, 5M DCRR §6.1.

#### **408 EXPIRATION AND RENEWAL OF LICENSES**

- 408.1 Licenses shall be issued to expire September 30, and shall be renewed every year by September 30.
- 408.2 Licenses may be renewed in the same class for which issued without reexamination upon the presentation of the current license and the payment of a fee of three dollars (\$3) prior to (but not more than a maximum of sixty (60) days before) expiration, or on the date of expiration of the license.
- 408.3 D.C. Government employees do not have to pay the renewal fee.

**SOURCE:** §6.1 of Commissioners' Order No. 301, 945, 5M DCRR §6.1.

#### **409 RENEWAL OF EXPIRED LICENSES**

- 409.1 Reexamination and a fee of three dollars (\$3) shall be required for the renewal of licenses that have been allowed to lapse.
- 409.2 Any person licensed under the authority of this chapter who has failed to renew his or her license prior to its expiration shall be permitted to renew the license without being required to take an examination in connection with the renewal, subject to the following conditions:
- (a) That the license was not revoked during the period for which it was issued, and was in full force and effect on the date of expiration; and
  - (b) That application for renewal has been made in writing within thirty (30) days after the date the license expired.
- 409.3 Nothing contained in this section shall be construed as authorizing or permitting the holder of a license which has expired and has not been renewed to continue to operate as if he or she were still holding a valid license.
- 409.4 Nothing contained in this section shall be construed as waiving any person from engaging in an activity for which a license is required without having first been issued a valid license to engage in that activity.

- 409.5 If a license expires while the licensee is in service in the U.S. Armed Forces, the license may be renewed without further examination upon presentation of his or her license to the Chairperson of the Board of Examiners within six (6) months after discharge with proof that the licensee was serving in the Army, Navy, Air Force, Marine Corps, or Coast Guard at the date of the expiration of the license.
- 409.6 The usual renewal fee of three dollars (\$3) shall be paid, and the new expiration date shall be one (1) year from the date of approval by the Chairman of the Board of Examiners. All licenses issued under this section shall expire September 30 of each year.

**SOURCE:** §6.1 of Commissioners' Order No. 301, 945, 5M DCRR §6.1.

#### **499 DEFINITIONS**

- 499.1 When used in this chapter or in connection with the implementation of this chapter, the terms and phrases set forth in this section shall have the meanings ascribed.

**Boiler Horsepower** - a horsepower shall be defined as any of the following:

- (a) The evaporation of thirty-four and one-half pounds of steam per hour (34.5 lbs./hr.) from and at two hundred twelve degrees (212° F.);
- (b) Thirty-three thousand four hundred and seventy-five British Thermal Units per hour (33,475 BTU/hr.);
- (c) One hundred forty square feet (140 ft.<sup>2</sup>) of steam radiation;
- (d) Two hundred twenty-four square feet (224 ft.<sup>2</sup>) of water radiation at one hundred fifty degrees Fahrenheit (150° F.); or
- (e) Ten kilowatts per hour (10 kw./hr.) electrical input to the boiler.

**Compressor Horsepower of a Refrigerating System** - for purposes of this chapter, the manufacturer's horsepower rating as given on the name plate of the unit.

**High Pressure Boiler** - any steam boiler that has the safety valve(s) set to relieve a pressure of more than fifteen pounds per square inch (15 lbs./in.<sup>2</sup>).

**Horsepower Rating** - the horsepower rating of a boiler shall be the largest rating determined in accordance with the following:

- (a) By dividing the square feet of boiler heating surface by ten (10);
- (b) If the boiler rating is based on other than ten square feet of heating surface per horsepower (10 ft.<sup>2</sup>/hp.), the manufacturer's output rating in horsepower shall be used; or
- (c) If the manufacturer's output rating is expressed in terms other than horsepower, the rating shall be converted into horsepower by the use of one of the factors in the definition of "boiler horsepower."



**Horsepower Rating of a Refrigeration System** - where reference is made to the "horsepower of a refrigeration system," this shall be considered to be either compressor horsepower or tons of refrigeration as converted to horsepower on an equal basis.

**Hot Water Heating Boiler** - any hot water boiler operated at pressures not exceeding one hundred sixty pounds (160 lbs.) or temperatures not exceeding two hundred fifty degrees Fahrenheit (250° F.).

**Low Pressure Boiler** - any steam boiler that has the safety valve(s) set to relieve at a pressure of fifteen pounds per square inch (15 lbs./in.<sup>2</sup>) or less.

**Packaged Self-Contained Air Conditioning Unit** - a "packaged, self-contained" air conditioning unit is where the unit is contained in one casing except for a cooling tower and circulating pump, and which is completely assembled and tested by one manufacturer and bears the approval label of the Underwriters Laboratories or the American Gas Association.

**Ton of Refrigeration** - the removal of heat at the rate of twelve thousand British Thermal Units per hour (12,000 BTU/hr.).

**SOURCE:** §§4.1 through 4.9 of Commissioners' Order No. 301, 945, 5M DCRR §§4.1 through 4.9.

